

# Pharmacy Technology Mississippi Curriculum Framework

Program CIP: 51.0805 – Pharmacy Technician/Assistant

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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

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## RESEARCH ABSTRACT

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

The last validated and approved revision of this curriculum took place in 2012. In the spring of 2015, the Office of Curriculum and Instruction (OCI) met with different industry/program visits. An industry questionnaire was used to gather feedback concerning the trends and needs, both current and future, of their field. Industry members stated the curriculum was strong and did not require a lot of major changes. The Office of Curriculum and Instruction also met with advisory committee members who reiterated what industry had stated. Program faculty, administrators, and industry members were consulted regarding industry workforce needs and trends.

### **Revision History:**

2008, Revised, Research and Curriculum Unit, Mississippi State University

## ADOPTION OF NATIONAL CERTIFICATION STANDARDS

The American Society of Health System Pharmacists (ASHP) standards were adopted for this curriculum. The American Society of Health System Pharmacists (ASHP) is the national professional organization whose more than 40,000 members include pharmacists, student pharmacists, and pharmacy technicians who serve as patient care providers on healthcare teams in acute and ambulatory settings. ASHP's vision is that medication use will be optimal, safe, and effective for all people all of the time.

In support of health system pharmacists, the ASHP mission is to:

- help people achieve optimal health outcomes
- helps its members achieve this mission by advocating and supporting the professional practice of pharmacists in hospitals, health systems, ambulatory clinics, and other settings spanning the full spectrum of medication use
- serves its members as their collective voice on issues related to medication use and public health

In addition to carrying out the mission for health system pharmacists, ASHP launched a 2015 Strategic Plan which consists of various goals to help patients and their care, members and partners and people and performance.

Industry standards are based on the American Society of Health System Pharmacists (ASHP) Content Specifications for the Examination in Pharmacy Technician. Permission was granted by the American Society of Health System Pharmacists (ASHP) organization to include the standards and guidelines in this curriculum.

More information related to these standards can be found at the following website: <http://www.ashp.org/>

## INDUSTRY JOB PROJECTION DATA

The field of pharmacy technician is growing steadily. There is a 40.09% increase in occupational demand at the state level and a 41.94% increase at the regional level. Median annual income for a pharmacy technician is \$23,795.20 at the state and regional levels. A summary of occupational data from the State Workforce Investment Board Data Center is displayed below:

**Table 1: Education Level**

Program Occupations	Education Level
Pharmacy Technicians	Moderate Term On-the-Job Training

**Table 2: Occupational Overview**

	Region	State	United States
2010 Occupational Jobs	2,914	3,265	333,140
2020 Occupational Jobs	4,136	4,574	435,235
Total Change	1,222	1,309	102,095
Total % Change	41.94%	40.09%	30.65%
2010 Median Hourly Earnings	\$11.44	\$11.44	\$13.65
2010 Median Annual Earnings	\$23,795.20	\$23,795.20	\$28,392.00
Annual Openings	122	130	10,209

**Table 3: Occupational Breakdown**

Description	2010 Jobs	2020 Jobs	Annual Openings	2010 Hourly Earnings	2010 Annual Earnings 2,080 Work Hours
Pharmacy Technicians	2914	4,136	122	\$11.44	\$23,795.20

**Table 4: Occupational Change**

Description	Regional Change	Regional % Change	State % Change	National % Change
Pharmacy Technicians	1222	41.94%	40.09%	30.65%

## ARTICULATION

No articulated credit will be offered upon implementation of this curriculum. Local agreements and dual credit partnerships are encouraged.

## TECHNICAL SKILLS ASSESSMENT

Colleges should report the following for students who complete the program with an Associate of Applied Science Degrees for technical skills attainment:

The *Pharmacy Technician Certification Board (PTCB)* will be used to assess students upon completion of this program and meeting the requirements for the Associate of Applied Science degree. The cost for the PTCB exam is \$129.00 (price subject to change).

## ONLINE AND BLENDED LEARNING OPPORTUNITIES

Course content includes lecture and laboratory semester credit hours. Faculty members are encouraged to present lecture related content to students in an online or blended learning environment. Training related to online and blended learning will be available to faculty members through the MS Community College Board.



## PROGRAM DESCRIPTION

The Pharmacy Technology curriculum is a program of study designed to prepare the student for employment and advancement in the pharmacy field. The curriculum requires a minimum of 73 hours of coursework in order to obtain an Associate of Applied Science degree. CPR-Health Care Provider is a prerequisite for the program. Successful completion of the CPR Health Care provider must be completed before the third semester of coursework.

Pharmacy technicians assist and support licensed pharmacists in providing direct patient care and medications to patients. Pharmacy technicians must work under the direction of a licensed pharmacist. Employers include pharmacies based in hospitals, retail settings, home health care, nursing homes, clinics, nuclear medicine settings, and mail-order prescription companies. Nontraditional employers for pharmacy technicians include medical-insurance companies, medical-computer-software companies, drug-manufacturing companies, drug-wholesale companies, and food-processing companies. The one requirement these pharmacy technician duties have in common is a need for absolute accuracy and precision in the technical and clerical aspects of this career.

Upon graduation from the program, the student is eligible to take the Pharmacy Technician Certification Board (PTCB) Pharmacy Technician Certification Exam.

Industry standards are based on the *American Society of Health System Pharmacists (ASHP)* standards.

More information related to these standards can be found at the following website: <http://www.ashp.org/>

## SUGGESTED COURSE SEQUENCE

### Associate of Applied Science Required Courses

			SCH Breakdown				Contact Hour Breakdown			Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical/ Internship	Total Contact Hours	Lecture	Lab	Clinical/ Internship	Certification Name
PHM 1111	Pharmacy Technician Fundamentals	1	1			15	15			OSHA Training (Completed during PHM 1111)
PHM 1123	Pharmacy Law	3	3			45	45			
PHM 1212	Computer Applications in Pharmacy	2		4		60		60		
PHM 1313	Pharmacy Math and Dosage Calculations	3	3			45	45			
PHM 1413	Pharmacy Anatomy and Physiology	3	3			45	45			
PHM 1424	Pharmacology I	4	4			60	60			
PHM 1512	Pharmaceutical Compounding	2	1	2		45	15	30		
PHM 1525	Pharmacy Practice	5	3	4		105	45	60		
PHM 2434	Pharmacology II	4	4			60	60			
PHM 2534	Nonprescription Medications and Devices	4	4			60	60			CPR Certification (Must be completed by the third semester of coursework)
PHM 2543	Drug Information Research	3	2	2		60	30	30		
PHM 2614	Practicum I	4			12	180			180	
PHM 2624	Practicum II	4			12	180			180	
PHM 2634	Practicum III	4			12	180			180	
PHM 2715	Pharmacy Management	5	3	2		75	45	30		
PHM 2813	Pharmacy Transition	3	3			45	45			
	<b>Total</b>	<b>54</b>	<b>34</b>	<b>14</b>	<b>36</b>	<b>1260</b>	<b>510</b>	<b>210</b>	<b>540</b>	Pharmacy Technician Certification Board (PTCB) Examination

NOTE: BIO 2514 Anatomy and Physiology I and BIO 2524 may be substituted for PHM 1413

### General Education Core Courses

To receive the Associate of Applied Science Degree, a student must complete all of the required coursework found in the Career Certificate option, Technical Certificate option and a minimum of 15 semester hours of General Education Core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college. The Southern Association of Colleges and Schools (SACS) Commission on Colleges Standard 2.7.3 from the Principles of Accreditation: Foundations for Quality Enhancement<sup>1</sup> describes the general education core.

Section 2.7.3 In each undergraduate degree program, the institution requires the successful completion of a general education component at the collegiate level that (1) is substantial component of each undergraduate degree, (2) ensures breadth of knowledge, and (3) is based on a coherent rationale. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours or the equivalent. These credit hours are to be drawn from and include at least one course from the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. The courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

### Academic Courses for Pharmacy Technology

			SCH Breakdown			Credit Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Credit Hours	Lecture	Lab	Certification Name
	Humanities/Fine Arts	3						
	Social/Behavioral Sciences	3						
	Natural science/mathematics	3						
	Any other instructor approved academic courses per local college requirement.	6						
<b>TOTAL</b>		<b>15</b>						

\*MAT course should be Intermediate Algebra, College Algebra or Higher

\*\*BIO 2514 Anatomy and Physiology I and BIO 2524 may be substituted for PHM 1413

<sup>1</sup>

Southern Association of Colleges and Schools Commission on Colleges. (2012). *The principles of accreditation: Foundations for quality enhancement*. Retrieved from <http://www.sacscoc.org/pdf/2012PrinciplesOfAccreditation.pdf>

## ASSOCIATE OF APPLIED SCIENCE REQUIRED COURSES

**Course Number and Name:**      **PHM 1111      Pharmacy Technician Fundamentals**

**Description:**                      This course introduces the student to the pharmacy technician career field and provides an overview of pharmacy practice and the opportunities open to certified pharmacy technicians.

<b>Hour Breakdown:</b>	Semester Credit Hours	Lecture	Lab	Contact Hours
	1	1		15

**Prerequisite:**                      Instructor Approved

**Student Learning Outcomes:**

1. Recognize the pharmacy technician's general role in the delivery of health care.
  - a. Compare and contrast the responsibilities of the pharmacist and the technician in the collection of patient-specific information.
  - b. Compare and contrast the responsibilities of the pharmacist and the technician when receiving and screening prescription or medication orders for completeness.
  - c. Compare and contrast the responsibilities of the pharmacist and the technician when preparing medications for distribution.
  - d. Compare and contrast the responsibilities of the pharmacist and the technician when counseling patients on the use of medications, equipment, and devices.
  - e. Compare and contrast the responsibilities of the pharmacist and the technician in the monitoring of drug therapy.
2. Discuss ethics in the conduct of all pharmacy practice activities.
  - a. Define the term ethics.
  - b. Compare and contrast ethics.
  - c. Explain an ethical code that pertains to the work functions of pharmacists.
  - d. Explain situations that may present ethical questions for the pharmacy technician.
3. Explain the roles of acute and nonacute care systems in delivering pharmaceutical care, such as ambulatory and/or community, home care, long-term care, and so forth.
  - a. Discuss the meaning of the term pharmaceutical care.
  - b. Discuss the role of the technician in the delivery of pharmaceutical care.
4. Explain the benefits of obtaining technician certification.
  - a. State the differences among certification, licensure, and registration.
  - b. Explain the process by which one can become a certified pharmacy technician.
5. Review professional organizations.
  - a. Explain the benefits of membership in the range of local, state, and national pharmacy organizations.
  - b. Describe the local, state, and national pharmacy organizations that offer value for the pharmacy technician.
6. Recognize the importance of continuing professional self-development.
  - a. Explain the necessity for technicians to stay current with advances in pharmacy practice.

- b. Discuss resources, including Web sites, journals, newsletters, and educational conferences, for staying current with advances in pharmacy practice, such as automation, drug therapy, devices, and so forth.
- 7. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.
  - a. Describe the legal and ethical guidelines pertaining to confidentiality of patient information.
  - b. Explain situations in which patient confidentiality issues may arise.

**ASHP Standards/Goals:**

**Personal/Interpersonal Knowledge and Skills**

- (1) Demonstrate ethical conduct in all job-related activities.
- (2) Present an image appropriate for the profession of pharmacy in appearance and behavior.
- (6) Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.

**Foundational Professional Knowledge and Skills**

- (8) Demonstrate understanding of healthcare occupations and the health care delivery system.
- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.
- (14) Demonstrate understanding of major trends, issues, goals, and initiatives taking place in the pharmacy profession.

**Processing and Handling of Medications and Medication Orders**

- (17) Assist pharmacists in collecting, organizing, and recording demographic and clinical information for direct patient care and medication-use review.
- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (19) Assist pharmacists in the identification of patients who desire/require counseling to optimize the use of medications, equipment, and devices.
- (20) Prepare non-patient-specific medications for distribution (e.g., batch, stock medications).
- (21) Distribute medications in a manner that follows specified procedures.
- (22) Practice effective infection control procedures, including preventing transmission of blood borne and airborne diseases.
- (24) Assist pharmacists in the monitoring of medication therapy.
- (25) Prepare patient-specific medications for distribution.
- (27) Use material safety data sheets (MSDS) to identify, handle, and safely dispose of hazardous materials.

**Procurement, Billing, Reimbursement and Inventory Management**

- (31) Initiate, verify, and assist in the adjudication of billing for pharmacy services and goods, and collect payment for these services.

**Patient- and Medication-Safety**

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.
- (39) Assist pharmacists in medication reconciliation.
- (40) Assist pharmacists in medication therapy management.

**Regulatory Issues**

- (42) Compare and contrast the roles of pharmacists and pharmacy technicians in ensuring pharmacy department compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.
- (43) Maintain confidentiality of patient information.

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### **Quality Assurance**

- (44) Apply quality assurance practices to pharmaceuticals, durable and nondurable medical equipment, devices, and supplies.
- (45) Explain procedures and communication channels to use in the event of a product recall or shortage, a medication error, or identification of another problem.

## VALIDATION COPY

**Course Number and Name:** PHM 1123 Pharmacy Law

**Description:** This course will provide federal and state laws pertaining to the practice of pharmacy.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3		45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss the history of the regulatory bodies.
  - a. State the need for the development of regulatory bodies.
  - b. Discuss the various regulatory bodies and their roles.
2. Discuss the process for development and approval of new pharmaceuticals.
  - a. Discuss the development process for a new pharmaceutical.
  - b. Discuss the approval process for a new pharmaceutical.
3. Discuss the Mississippi Pharmacy Practice Act and Mississippi Board of Pharmacy regulations.
  - a. Discuss the Mississippi Pharmacy Practice Act.
  - b. Discuss the Mississippi Board of Pharmacy regulations.
4. Explain the effect of federal laws on the practice of pharmacy.
  - a. Discuss the Controlled Substance Act.
  - b. Discuss the Food, Drug, and Cosmetic Act.
  - c. Discuss OBRA '90.
  - d. Discuss HIPPA.
5. Follow protocol to assemble appropriate patient counseling information materials.
  - a. Explain the importance of counseling in the use of medications.
  - b. Describe the obligations of the pharmacist for counseling as prescribed in OBRA '90.
  - c. Describe the obligations of the pharmacist for counseling as prescribed in HIPPA.
6. Describe established laws and protocols to select the appropriate product.
  - a. Explain federal and state laws governing the substitution of drug products.
  - b. Explain the purpose and use of a formulary (e.g., state, health system, buying group, etc.).
  - c. Explain the influence that the formulary and/or policies of third party payers have on the selection of products.

**ASHP Standards/Goals:**

**Personal/Interpersonal Knowledge and Skills**

- (1) Demonstrate ethical conduct in all job-related activities.

**Foundational Professional Knowledge and Skills**

- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.

**Processing and Handling of Medications and Medication Orders**

- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (19) Assist pharmacists in the identification of patients who desire/require counseling to optimize the use of

## VALIDATION COPY

medications, equipment, and devices.

- (21) Distribute medications in a manner that follows specified procedures.
- (22) Practice effective infection control procedures, including preventing transmission of blood borne and airborne diseases.
- (23) Assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation (e.g., controlled substances, immunizations, chemotherapy, investigational drugs, drugs with mandated Risk Evaluation and Mitigation Strategies [REMS]).
- (27) Use material safety data sheets (MSDS) to identify, handle, and safely dispose of hazardous materials.

### **Patient- and Medication-Safety**

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.

### **Regulatory Issues**

- (42) Compare and contrast the roles of pharmacists and pharmacy technicians in ensuring pharmacy department compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.
- (43) Maintain confidentiality of patient information.

### **Quality Assurance**

- (45) Explain procedures and communication channels to use in the event of a product recall or shortage, a medication error, or identification of another problem.



## VALIDATION COPY

**Course Number and Name:** PHM 1212 Computer Applications in Pharmacy

**Description:** This course includes a comprehensive understanding of pharmacy computer systems in addition to hands-on operation.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
2		4	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Demonstrate keyboard literacy skills.
  - a. Demonstrate ability to key a minimum of 30 words per minute (net).
  - b. Demonstrate ability to utilize word processing software.
2. Use computer database systems employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
  - a. Demonstrate skill in performing the basic functions for data entry.
  - b. Demonstrate skill in performing the basic functions for information retrieval.
3. Use computer skills for new patient data entry.
  - a. Demonstrate ability to enter allergies.
  - b. Demonstrate ability to enter third party plan.
  - c. Demonstrate ability to enter payment mode.
4. Use computer skills to process prescriptions.
  - a. Accurately select data to enter into database.
  - b. Utilize drug interaction screening procedures.
5. Recognize online data updates.
  - a. Utilize price updates.
  - b. Utilize third-party drug utilization reviews.

**ASHP Standards/Goals:**

**Foundational Professional Knowledge and Skills**

- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.

**Processing and Handling of Medications and Medication Orders**

- (17) Assist pharmacists in collecting, organizing, and recording demographic and clinical information for direct patient care and medication-use review.
- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.

**Processing and Handling of Medications and Medication Orders**

- (26) Maintain pharmacy facilities and equipment, including automated dispensing equipment.

**Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

**Regulatory Issues**

- (43) Maintain confidentiality of patient information.

## VALIDATION COPY

**Course Number and Name:** PHM 1313 Pharmacy Math and Dosage Calculations

**Description:** This course involves proper use of the metric, apothecary, and avoirdupois systems. It covers conversion between the systems, application of formulas, calculations of fractional dosages, and methods of calculating dosages from all drug forms. Review of calculations dealing with ratio and proportion, percentages, ratio strength, reducing and enlarging formulas, and dilution and concentration problems.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3		45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Accurately count or measure finished dosage forms as specified by the prescription or medication order.
  - a. Accurately use the metric system to count and measure.
  - b. Accurately use the avoirdupois system to count and measure.
  - c. Accurately use the household system to count and measure.
  - d. Demonstrate skill in the operation of common pharmaceutical measurement and weighing devices.
2. Accurately determine the correct amounts of ingredients for a compounded product.
  - a. Given mathematical problems using Roman numerals, Arabic numerals, fractions, apothecary symbols, and decimals, perform the mathematical steps to get the correct answer.
  - b. Given mathematical problems involving conversion of weights and measures and direct ratio and proportion, perform the mathematical steps to solve for the correct answer.
  - c. Given mathematical problems involving reducing and enlarging formulas, perform the mathematical steps to solve for the correct answer.
  - d. Given mathematical problems involving specific gravity, percent strength, weight-in-volume, weight-in-weight, and volume-in-volume, perform the mathematical steps to solve for the correct answer.
  - e. Given mathematical problems involving ratio strength calculations for pharmaceutical preparations, perform the mathematical steps to solve for the correct answer.
  - f. Given mathematical problems involving dilution and concentration, perform the mathematical steps to solve for the correct answer.
  - g. Given mathematical problems involving dilution and concentration, perform the mathematical steps to solve for the correct answer using the allegation method.
  - h. Given mathematical problems involving milliequivalents, perform the mathematical steps to solve for the correct answer.

**ASHP Standards/Goals:**

**Foundational Professional Knowledge and Skills**

- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.

**Processing and Handling of Medications and Medication Orders**

- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.

**Procurement, Billing, Reimbursement and Inventory Management**

- (31) Initiate, verify, and assist in the adjudication of billing for pharmacy services and goods, and collect payment for these services.

## VALIDATION COPY

**Course Number and Name:** PHM 1413 Pharmacy Anatomy and Physiology

**Description:** This course involves the study of body structure essential to safe and effective pharmaceutical care.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3		45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss basic anatomy and physiology of the nervous system.
  - a. Describe the basic anatomy of the nervous system.
  - b. Explain the basic physiology of the nervous system.
2. Discuss basic anatomy and physiology of the endocrine system.
  - a. Describe the basic anatomy of the endocrine system.
  - b. Explain the basic physiology of the endocrine system.
3. Discuss basic anatomy and physiology of the skeletal system.
  - a. Describe the basic anatomy of the skeletal system.
  - b. Explain the basic physiology of the skeletal system.
4. Discuss basic anatomy and physiology of the muscular system.
  - a. Describe the basic anatomy of the muscular system.
  - b. Explain the basic physiology of the muscular system.
5. Discuss basic anatomy and physiology of the cardiovascular system.
  - a. Describe the basic anatomy of the cardiovascular system.
  - b. Explain the basic physiology of the cardiovascular system.
6. Discuss basic anatomy and physiology of the respiratory system.
  - a. Describe the basic anatomy of the respiratory system.
  - b. Explain the basic physiology of the respiratory system.
7. Discuss basic anatomy and physiology of the gastrointestinal system.
  - a. Describe the basic anatomy of the gastrointestinal system.
  - b. Explain the basic physiology of the gastrointestinal system.
8. Discuss basic anatomy and physiology of the renal system.
  - a. Describe the basic anatomy of the renal system.
  - b. Explain the basic physiology of the renal system.
9. Discuss basic anatomy and physiology of the reproductive system.
  - a. Describe the basic anatomy of the reproductive system.
  - b. Explain the basic physiology of the reproductive system.
10. Discuss basic anatomy and physiology of the immune system.
  - a. Describe the basic anatomy of the immune system.
  - b. Explain the basic physiology of the immune system.
11. Discuss basic anatomy and physiology of the eyes, ears, nose, and throat.

## VALIDATION COPY

- a. Describe the basic anatomy of the eyes, ears, nose, and throat.
  - b. Explain the basic physiology of the eyes, ears, nose, and throat.
12. Discuss basic anatomy and physiology of the dermatologic system.
- a. Describe the basic anatomy of the dermatologic system.
  - b. Explain the basic physiology of the dermatologic system.
13. Discuss basic anatomy and physiology of the hematologic system.
- a. Describe the basic anatomy of the hematologic system.
  - b. Explain the basic physiology of the hematologic system.

### **ASHP Standards/Goals:**

#### **Foundational Professional Knowledge and Skills**

- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.

#### **Foundational Professional Knowledge and Skills**

- (11) Demonstrate knowledge and skills in areas of science relevant to the pharmacy technician's role, including anatomy/physiology and pharmacology.

#### **Patient- and Medication-Safety**

- (39) Assist pharmacists in medication reconciliation.

## VALIDATION COPY

**Course Number and Name:** PHM 1424 Pharmacology I

**Description:** This course involves the study of human disease processes and rational pharmacotherapeutics relating to fluids and nutrients in the following body systems: nervous, endocrine, skeletal, muscular, gastrointestinal, reproductive, and immune. Indications, contraindications, mechanism of action, side effects, dosages, and methods of administration including how these principles can be utilized in pharmacy practice.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	4		60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the nervous system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the nervous system.
2. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the endocrine system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the endocrine system.
3. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the skeletal system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.

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- c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the skeletal system.
4. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the muscular system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the muscular system.
5. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the gastrointestinal system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the gastrointestinal system.
6. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the reproductive system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the reproductive system.

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7. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the immune system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the immune system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the immune system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the immune system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the immune system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the immune system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the immune system.

### **ASHP Standards/Goals:**

#### **Foundational Professional Knowledge and Skills**

- (11) Demonstrate knowledge and skills in areas of science relevant to the pharmacy technician's role, including anatomy/physiology and pharmacology.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.
- (16) Identify and describe emerging therapies.

#### **Processing and Handling of Medications and Medication Orders**

- (23) Assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation (e.g., controlled substances, immunizations, chemotherapy, investigational drugs, drugs with mandated Risk Evaluation and Mitigation Strategies [REMS]).
- (24) Assist pharmacists in the monitoring of medication therapy.

#### **Patient- and Medication-Safety**

- (40) Assist pharmacists in medication therapy management.

## VALIDATION COPY

**Course Number and Name:** PHM 1512      **Pharmaceutical Compounding**

**Description:** This course is designed to present the concepts of design, preparation, use, and evaluation of solid and semisolid dosage forms. Specific topics include powders, tablets, capsules, coated dosage forms, suspensions, emulsions, magmas, gels, lotions, ointments, creams, pastes, suppositories, transdermal systems, sustained release products, and novel drug delivery systems. Exercises in computer application, prescription, and physician order interpretation, and the introduction of extemporaneous compounding are performed in the laboratory.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
2	1	2	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss the need for compounding pharmaceuticals.
  - a. Define the term compounding.
  - b. Define the term manufacturing.
  - c. Differentiate between compounding and manufacturing.
  - d. Explain why certain medications must be compounded.
2. Given a weighing or counting device used at a specific site, accurately calibrate the device.
  - a. Describe the equipment and pharmacy devices common to pharmacy practice.
  - b. Describe the term calibration as it refers to the equipment commonly used in pharmacy practice.
  - c. Given a particular type of weighing device, accurately calibrate the device.
  - d. Given a particular counting device, accurately calibrate the device.
3. Compound nonsterile products using appropriate technique.
  - a. Demonstrate the appropriate technique to compound ointments.
  - b. Demonstrate the appropriate technique to compound suspensions.
  - c. Demonstrate the appropriate technique to compound solutions.
  - d. Demonstrate the appropriate technique to compound emulsions.
  - e. Demonstrate the appropriate technique to compound capsules.
  - f. Demonstrate the appropriate technique to compound suppositories.
4. Apply the principles of quality assurance to all pharmaceutical care activities.
  - a. Describe quality assurance methods.
  - b. Demonstrate competency in weighing and/or measuring compounding ingredients.
  - c. Accurately calculate components.
  - d. Accurately record information on permanent compounding record.

**ASHP Standards/Goals:**

**Personal/Interpersonal Knowledge and Skills**

- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

**Foundational Professional Knowledge and Skills**

- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.



## VALIDATION COPY

### **Processing and Handling of Medications and Medication Orders**

- (20) Prepare non-patient-specific medications for distribution (e.g., batch, stock medications).
- (21) Distribute medications in a manner that follows specified procedures.
- (25) Prepare patient-specific medications for distribution.
- (26) Maintain pharmacy facilities and equipment, including automated dispensing equipment.

### **Sterile and Nonsterile Compounding**

- (29) Prepare medications requiring compounding of nonsterile products.

### **Procurement, Billing, Reimbursement and Inventory Management**

- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.

### **Patient- and Medication-Safety**

- (36) Verify measurements, preparation, and/or packaging of medications produced by other healthcare professionals (e.g., tech-check-tech).

## VALIDATION COPY

**Course Number and Name:**        **PHM 1525        Pharmacy Practice**

**Description:**                                This course is a study of the medication distribution systems utilized in retail and hospital pharmacy, including processing of individual prescriptions, floor stock distribution, unit dose systems, and IV admixture. Topics discussed include hazardous waste handling, infection control, principles of quality assurance, and equipment use and maintenance. Exercises in packaging, unit dose functions, aseptic compounding, parental admixture, and use of computer database systems will be performed in the laboratory. All student learning outcomes in this course comply with the 797 Mississippi State Board Standards for Pharmacy Practice.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
5	3	4	105

**Prerequisite:**                                Instructor Approved

**Student Learning Outcomes:**

1. Describe how to assemble the correct ingredients for sterile or nonsterile products that require compounding.
  - a. Define the terms sterile and nonsterile as applied to pharmacy.
  - b. Identify nine key areas that define good manufacturing practices.
  - c. Recognize the importance of written procedures for production and process control.
  - d. Identify the equipment and supplies used when preparing sterile products.
2. Describe how biological safety cabinets are used to assure sterility in product compounding.
  - a. Describe the underlying principle of laminar flow biological cabinets.
  - b. Explain how laminar flow biological safety cabinets contribute to infection control.
  - c. Explain the logic of each step in the proper procedure for cleaning a laminar flow biological safety cabinet.
  - d. Identify disinfectant agents for proper cleaning.
  - e. Demonstrate the cleaning technique for laminar flow biological safety cabinets.
  - f. List the differences between a horizontal laminar flow biological safety cabinet and a vertical laminar flow hood.
3. Describe and demonstrate how to compound sterile products using appropriate techniques, equipment, and devices.
  - a. Explain the basic manipulations needed to prepare a sterile product by using aseptic technique.
  - b. Explain the logic of each of the steps of sterile technique.
  - c. Explain therapeutic, pharmaceutical, and chemical incompatibility.
  - d. Explain how the effects of incompatibilities can be overcome when compounding sterile products.
  - e. Demonstrate the proper use of equipment and devices used in compounding sterile products.
  - f. Explain and use horizontal and vertical laminar flow hoods.
4. Discuss and demonstrate policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
  - a. Explain the need for sanitation management in the pharmacy setting.
  - b. Define hazardous waste.
  - c. Define infection control.
  - d. Explain OSHA regulations as they pertain to pharmacy practice.

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- e. Explain state regulations as they pertain to the handling of hazardous waste and infection control.
  - f. Identify the proper personal protection attire and supplies for preparing sterile products.
  - g. Explain institutional policies and procedures as they apply to hazardous and waste management and infection control.
  - h. Demonstrate proper disposal of hazardous waste consistent with statutory regulations.
  - i. Identify and demonstrate the wear of personal protective equipment.
5. Describe and demonstrate how to compound cytotoxic and other hazardous drug products using appropriate techniques.
- a. Explain risks involved in the preparation and handling of cytotoxic and other hazardous drug products.
  - b. Explain the supplies and procedures used to provide personal protection from hazardous substances.
  - c. Explain the logic of each of the steps in cytotoxic or other hazardous drug product preparation techniques.
  - d. Discuss the underlying principle of Class II biological safety cabinets and their use in the preparation of hazardous drugs.
  - e. Discuss safe and effective labeling, storage, and transportation practices essential to prevent accidental exposure to hazardous drugs.
  - f. Demonstrate proper procedures for compounding cytotoxic and other hazardous drug products.
  - g. Demonstrate skill in cleaning up a cytotoxic or other hazardous waste spill.
6. Efficiently deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
- a. Explain the importance of getting the right medication, equipment, device, or supplies to the patient or patient's representative.
  - b. Describe the various systems used to distribute medications.
  - c. Describe standard policies and procedures for recording the distribution of prescription medications.
  - d. Describe standard policies and procedures for recording the distribution of controlled substances.
  - e. Operate automated distribution systems.
  - f. Follow established policies and procedures to record the distribution of prescription medications.
  - g. Follow established policies and procedures to record the distribution of controlled substances.
7. Apply the principles of quality assurance to all pharmaceutical care activities.
- a. Describe and use quality assurance.
  - b. Define quality control system.
  - c. Identify causes or factors that contribute to medication errors.
  - d. List examples of common medication errors.
  - e. Discuss the possible consequences of actual medication errors.
  - f. Describe the steps to be taken when an error has been identified.
  - g. Describe the quality assurance recommendations for product integrity and patient safety in sterile product preparation.
  - h. Explain how sterile products are grouped into three levels of risk to the patient, and identify the risk level of commonly prepared products.
  - i. Explain the mechanism for validation of aseptic technique procedures that result in sterile products of acceptable quality.

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- j. Explain end-product evaluation.
  - k. Explain how adverse drug reaction reports are used in quality assurance programs.
  - l. Describe and demonstrate prospective drug use evaluations and retrospective drug use evaluations.
8. Describe and demonstrate how computer database systems are employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
- a. Describe how automation impacts the drug distribution process.
  - b. List the types of computer-generated reports utilized by pharmacy personnel in an institutional pharmacy setting.
  - c. Describe how technology is used to monitor the clinical status of patients.
  - d. Describe the difference between decentralized and centralized automated dispensing systems.
  - e. Describe the limitations of automated dispensing systems.
  - f. Discuss the advantages of paperless charting.
  - g. Demonstrate use of a typical database used to support the pharmacy functions of the acute care practice environment.
  - h. Demonstrate use of a typical database used to support the pharmacy functions of the nonacute care practice environment.
9. Maintain a clean and neat work environment.
- a. Describe a clean room for parenteral drug compounding.
  - b. Demonstrate clean room design.
  - c. Set up materials to demonstrate a clean and neat work environment.
  - d. Explain how pharmacies fulfill statutory requirements for cleanliness and orderliness.
10. Accurately calibrate a weighing or counting device, fluid compounder, or syringe pump.
- a. Describe the equipment and pharmacy devices common to pharmacy practice.
  - b. Describe the term calibration as it refers to the equipment commonly used in pharmacy practice.
  - c. Given a particular type of weighing device, accurately calibrate the device.
  - d. Given a particular type of compounder, accurately calibrate the device.
  - e. Given a particular type of pump, accurately calibrate the pump.
11. Follow manufacturers' guidelines in troubleshooting, maintaining, and repairing electronic devices used by the pharmacy in the preparation and dispensing of medications.
- a. Explain the role of electronic devices in the delivery of pharmaceutical care.
  - b. Explain the role of equipment maintenance to assure the intended outcome.
  - c. Disassemble equipment for cleaning.
  - d. Perform routine maintenance on equipment.
12. Assemble the correct ingredients for sterile or nonsterile products that require compounding.
- a. Demonstrate the proper procedure for maintaining the sterility of materials being assembled for compounding a sterile product.
  - b. Demonstrate the proper procedure for compounding a sterile or nonsterile product.
13. Assist the pharmacist in the administration of immunizations.
- a. Explain how Mississippi laws and regulations determine what activities associated with the administration of immunizations can be delegated by pharmacists to technicians.
14. Verify the measurements, preparation, and/or packaging of medications produced by other technicians.

## VALIDATION COPY

- a. Explain how Mississippi laws and regulations determine what activities associated with verifying the measurements, preparation, and/or packaging of medications produced by other technicians can be delegated by pharmacists to technicians.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (1) Demonstrate ethical conduct in all job-related activities.
- (2) Present an image appropriate for the profession of pharmacy in appearance and behavior.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

#### **Foundational Professional Knowledge and Skills**

- (8) Demonstrate understanding of healthcare occupations and the health care delivery system.
- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.
- (10) Demonstrate commitment to excellence in the pharmacy profession and to continuing education and training.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.
- (14) Demonstrate understanding of major trends, issues, goals, and initiatives taking place in the pharmacy profession.

#### **Processing and Handling of Medications and Medication Orders**

- (17) Assist pharmacists in collecting, organizing, and recording demographic and clinical information for direct patient care and medication-use review.
- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (19) Assist pharmacists in the identification of patients who desire/require counseling to optimize the use of medications, equipment, and devices.
- (20) Prepare non-patient-specific medications for distribution (e.g., batch, stock medications).
- (21) Distribute medications in a manner that follows specified procedures.
- (22) Practice effective infection control procedures, including preventing transmission of blood borne and airborne diseases.
- (23) Assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation (e.g., controlled substances, immunizations, chemotherapy, investigational drugs, drugs with mandated Risk Evaluation and Mitigation Strategies [REMS]).
- (24) Assist pharmacists in the monitoring of medication therapy.
- (25) Prepare patient-specific medications for distribution.
- (26) Maintain pharmacy facilities and equipment, including automated dispensing equipment.
- (27) Use material safety data sheets (MSDS) to identify, handle, and safely dispose of hazardous materials.

#### **Sterile and Nonsterile Compounding**

- (28) Prepare medications requiring compounding of sterile products.
- (30) Prepare medications requiring compounding of chemotherapy/hazardous products.

#### **Procurement, Billing, Reimbursement and Inventory Management**

- (31) Initiate, verify, and assist in the adjudication of billing for pharmacy services and goods, and collect payment for these services.
- (32) Apply accepted procedures in purchasing pharmaceuticals, devices, and supplies.
- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.
- (34) Explain pharmacy reimbursement plans for covering pharmacy services.

#### **Patient- and Medication-Safety**

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.
- (36) Verify measurements, preparation, and/or packaging of medications produced by other healthcare professionals (e.g., tech-check-tech).

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- (37) Explain pharmacists' roles when they are responding to emergency situations and how pharmacy technicians can assist pharmacists by being certified as Basic Life Support (BLS) Healthcare Providers.
- (39) Assist pharmacists in medication reconciliation.
- (40) Assist pharmacists in medication therapy management.

### **Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

### **Regulatory Issues**

- (42) Compare and contrast the roles of pharmacists and pharmacy technicians in ensuring pharmacy department compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.

**Course Number and Name:** PHM 2434 Pharmacology II

**Description:** This course is a study of the human disease processes and rational pharmacotherapeutics relating to the cardiovascular, respiratory, renal, hematologic, and dermatologic systems as well as eyes, ears, nose, and throat. Indications, contraindications, mechanism of action, side effects, dosages, and methods of administration including how these principles can be utilized in pharmacy practice.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	4		60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the cardiovascular system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the cardiovascular system.
2. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the respiratory system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the respiratory system.
3. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the renal system.
  - a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the renal system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the renal system.

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- c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the renal system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the renal system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the renal system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the renal system.
4. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the eyes, ears, nose, and throat system.
- a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the eyes, ear, nose, and throat system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the eyes, ears, nose, and throat system.
5. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the dermatologic system. PHM1, PHM7, PHM14, PHM15
- a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the dermatologic system.
6. Explain the use and side effects of prescription and nonprescription medications commonly used to treat diseases affecting the hematologic system. PHM1, PHM7, PHM14, PHM15
- a. Explain the therapeutic effects of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  - b. Describe the adverse effects of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  - c. State the brand and generic names of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  - d. State the dosage forms of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  - e. State the route of administration of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.
  - f. State common doses of prescription and nonprescription medications commonly used to treat diseases of the hematologic system.



**ASHP Standards/Goals:**

**Foundational Professional Knowledge and Skills**

- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.
- (11) Demonstrate knowledge and skills in areas of science relevant to the pharmacy technician's role, including anatomy/physiology and pharmacology.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.
- (16) Identify and describe emerging therapies.

**Processing and Handling of Medications and Medication Orders**

- (23) Assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation (e.g., controlled substances, immunizations, chemotherapy, investigational drugs, drugs with mandated Risk Evaluation and Mitigation Strategies [REMS]).
- (24) Assist pharmacists in the monitoring of medication therapy.

**Patient- and Medication-Safety**

- (40) Assist pharmacists in medication therapy management.

## VALIDATION COPY

**Course Number and Name:** PHM 2534 Nonprescription Medications and Devices

**Description:** This course reviews the categories of the over-the-counter medications, explains the types and procedures of home monitoring equipment, and provides guidelines for patient counseling. This course also explains the durable and surgical or nondurable medical products, highlights concepts of vitamins, herbs, and nutritional supplements and the nontraditional treatment options.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	4		60

**Prerequisite:** Instructor Approved

### **Student Learning Outcomes:**

1. Recognize the use of nonprescription medications used to treat common diseases.
  - a. State the route of administration of nonprescription medications used to treat common diseases.
  - b. State the dosage forms of nonprescription medications used to treat common diseases.
  - c. State the side effects of nonprescription medications used to treat common diseases.
2. Demonstrate skill in monitoring procedures selected by the program for training.
  - a. Demonstrate skill in monitoring procedures such as finger-stick blood draw for glucose monitoring and cholesterol screening.
  - b. Demonstrate skill in monitoring procedures such as vital signs.
  - c. Demonstrate skill in using respiratory therapy aids such as nebulizers, spacers, and incentive spirometers.
  - d. Demonstrate the proper method for “sizing” crutches, canes, and walkers.
  - e. Discuss the differences in urine and blood test strips, blood-glucose machines, and syringes.
  - f. Demonstrate knowledge of ostomy and colostomy supplies.
  - g. Demonstrate knowledge of incontinence supplies.
  - h. Demonstrate the proper method for sizing of orthopedic devices.
  - i. Demonstrate the proper method for sizing antiembolism or support hosiery.
3. Discuss the use of nutritional aids and their role in self-care.
  - a. Recognize nutritional supplements (Ensure, etc.) and disease states.
  - b. Utilize the literature to inform patients concerning vitamins, herbs, and so forth.
4. Identify aids used with behavior modification to achieve a desired outcome.
  - a. Utilize literature to inform patient concerning smoking cessation products.
  - b. Utilize literature to inform patient concerning diet products.
5. Recognize established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
  - a. Identify items requiring special handling and storage.
  - b. Demonstrate ability to stock items in appropriate storage locations.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (1) Demonstrate ethical conduct in all job-related activities.
- (2) Present an image appropriate for the profession of pharmacy in appearance and behavior.

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- (3) Communicate clearly when speaking and in writing.
- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.

### **Foundational Professional Knowledge and Skills**

- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.
- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.

### **Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

### **Quality Assurance**

- (44) Apply quality assurance practices to pharmaceuticals, durable and nondurable medical equipment, devices, and supplies.

## VALIDATION COPY

**Course Number and Name:** PHM 2543 Drug Information Research

**Description:** This course reviews the concepts of obtaining pertinent patient information and data collection, including patient medical records, patient interviews, drug-use reviews, literature resources, and problem solving.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

### Student Learning Outcomes:

1. Compare and contrast the responsibilities of the pharmacist and the technician in the collection of patient-specific information.
  - a. Explain the purposes for which pharmacists collect patient-specific information.
  - b. Explain the technician's role in the collection of patient-specific information.
2. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
  - a. State the definitions of medical terms commonly used in the range of patient care settings.
  - b. When given a list of commonly used medical terms, write the accepted abbreviation for each, or when given the abbreviation, write the term.
  - c. Describe the type of information that is contained in each section of a patient medical chart or record.
  - d. Use knowledge of the organization of patient medical charts and records to efficiently locate a specific piece of information.
  - e. Describe the categories of information kept in patient profiles.
  - f. Use knowledge of the organization of patient profiles to locate a specific piece of information.
3. Effectively interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
  - a. Discuss the framing of questions so that they elicit the desired patient-specific information from the patient.
  - b. Effectively query other health-care professionals to collect pertinent patient information for use by the pharmacist.
4. When collecting patient-specific information for use by the pharmacist, identify situations where the patient requires the attention of the pharmacist.
  - a. State potential problem situations to which the technician should alert the pharmacist.
  - b. State specific types of questions from patients or health-care providers to which an answer by the technician would be inappropriate
5. Collect data for drug use review.
  - a. Explain the purpose of a drug use review.
  - b. Explain the structure of a drug use review.
  - c. Utilize online and print-based resources to collect data.
6. Compare and contrast the responsibilities of the pharmacist and the technician in the monitoring of drug therapy.
  - a. Explain the purpose of monitoring a patient's drug therapy.

## VALIDATION COPY

- b. Use knowledge of typical computer database systems employed in a variety of pharmacy practice environments to accurately and efficiently enter and retrieve data.
- 7. Demonstrate consistent use of a systematic approach to solving problems encountered in one's work as a technician.
  - a. Explain the kinds of problems encountered in the work of the technician that benefit from the use of a systematic problem solving approach.
  - b. Explain a systematic approach to problem solving.
  - c. Explain the usefulness of building consensus.
  - d. Explain the concept of consensus building.
- 8. Demonstrate the ability to conduct a drug literature research.
  - a. Use online and print-based resources to collect pertinent information.
  - b. Organize the information in a concise, logical sequence.
  - c. Prepare the written report using a data processor.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (3) Communicate clearly when speaking and in writing.

#### **Patient- and Medication-Safety**

- (40) Assist pharmacists in medication therapy management.

## VALIDATION COPY

**Course Number and Name:** PHM 2614 Practicum I

**Description:** This course allows students to apply pharmacist technician concepts in community and hospital pharmacy, home health, and extended care settings. The student will be placed in a community or institutional setting as the setting is available. Emphasis is placed on functions associated with medication distribution systems.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Clinical	Contact Hours
4		12	180

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Maintain appropriate dress and behavior standards in the community or institutional setting.
  - a. Act ethically in the conduct of all pharmacy practice activities.
  - b. Dress in attire that follows the site's dress code.
  - c. Maintain personal hygiene.
  - d. Consistently maintain personal self-control and decorum.
2. Use appropriate communication to collect pertinent information for use by the pharmacist in the community or institutional setting.
  - a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
  - b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
  - c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
  - d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
  - e. Follow protocol to assemble appropriate patient information materials.
3. Address all communication at an appropriate level in the community or institutional setting.
  - a. Use listening skills consistently in the performance of job functions.
  - b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
  - c. Combine compassion with the delivery of pharmacy services.
  - d. Address all communications with a patient or his or her caregiver in a respectful manner.
  - e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.
4. Receive and screen prescription or medication orders for completeness in the community or institutional setting.
  - a. Use first-person and electronic systems to receive prescription or medication orders.
  - b. When presented with a prescription or medication order, accurately and efficiently assess for completeness.
  - c. Efficiently secure information to complete a prescription or medication order.
5. Prepare medications for distribution in the community or institutional setting.

## VALIDATION COPY

- a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure.
  - b. Follow established laws and protocols to select the appropriate product.
  - c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory.
  - d. Accurately count or measure finished dosage as specified by the prescription or medication order.
  - e. Assemble the correct ingredients for sterile products that require compounding.
  - f. Determine the correct amounts of ingredients for a compounded product.
  - g. Follow safety policies and procedures in the preparation of all medications.
  - h. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation.
  - i. Package the product in the appropriate type and size of container using a manual process or automated system.
  - j. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels.
  - k. Affix the appropriate primary and auxiliary labels to containers.
  - l. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use.
  - m. Follow established policies and procedures for recording the preparation of controlled substances.
  - n. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.
6. Distribute medications in the community or institutional setting.
- a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
  - b. Follow established policies and procedures to record the distribution of prescription medications.
  - c. Follow established policies and procedures to record the distribution of controlled substances.
7. Collect payment and/or initiate billing for pharmacy services and goods in the community setting.
- a. Identify the customer's or patient's method of payment for a prescription or medication order and associated services.
  - b. Use electronic systems to verify third-party coverage for a prescription medication order.
  - c. Verify third-party coverage for a prescription or medication order by phone.
  - d. Accurately complete third-party claims forms.
  - e. Accurately record the receipt of payment for pharmaceutical goods and services.
  - f. Accurately determine those items that are taxable.
  - g. Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.
  - h. Determine payment due the health system for medication orders.
8. Control the inventory of medication, equipment, and devices according to an established plan in the institutional setting.
- a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.
  - b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
  - c. Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.

## VALIDATION COPY

- d. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - e. Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - f. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
  - g. Explain alternative strategies for securing a pharmacy item that is not available.
  - h. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
  - i. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
  - j. Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
  - k. Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.
9. Maintain pharmacy equipment and facilities in the community or institutional setting.
- a. Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
  - b. Maintain a clean and neat work environment.
  - c. Given a weighing or counting device, accurately calibrate the device.
10. Discuss the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting.
- a. Explain the established protocol for recording the preparation of investigational drug products.
  - b. Explain the established protocol for storage of investigational drug products.
  - c. Explain the established protocol to record the distribution of investigational drug products.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5) Apply self-management skills, including time management, stress management, and adapting to change.
- (6) Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

#### **Processing and Handling of Medications and Medication Orders**

- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (25) Prepare patient-specific medications for distribution.

#### **Procurement, Billing, Reimbursement and Inventory Management**

- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.

#### **Patient- and Medication-Safety**

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.
- (37) Explain pharmacists' roles when they are responding to emergency situations and how pharmacy technicians can assist pharmacists by being certified as Basic Life Support (BLS) Healthcare Providers.
- (38) Demonstrate skills required for effective emergency preparedness.
- (39) Assist pharmacists in medication reconciliation.



**Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

**Regulatory Issues**

- (43) Maintain confidentiality of patient information.

## VALIDATION COPY

**Course Number and Name:** PHM 2624 Practicum II

**Description:** This course is a progression of internship rotations in community hospitals, medical centers, or pharmaceutical manufacturers. The student will be placed in the setting not used in Practicum I. Emphasis is placed on intravenous admixture preparations, total parenteral nutrition, chemotherapy preparations, and the use of controlled and investigational drugs in an institution.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Clinical	Contact Hours
4		12	180

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Continue to maintain appropriate dress and behavior standards in the community or institutional setting.
  - a. Act ethically in the conduct of all pharmacy practice activities.
  - b. Dress in attire that follows the site's dress code.
  - c. Maintain personal hygiene.
  - d. Consistently maintain personal self-control and decorum.
2. Use appropriate communication to collect pertinent information for use by the pharmacist in the community or institutional setting.
  - a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
  - b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
  - c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
  - d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
  - e. Follow protocol to assemble appropriate patient information materials.
3. Continue to address all communication at an appropriate level in the community or institutional setting.
  - a. Use listening skills consistently in the performance of job functions.
  - b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
  - c. Combine compassion with the delivery of pharmacy services.
  - d. Address all communications with a patient or his or her caregiver in a respectful manner.
  - e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.
4. Continue to receive and screen prescription or medication orders for completeness in the community or institutional setting.
  - a. Use first-person and electronic systems to receive prescription or medication orders.
  - b. When presented with a prescription or medication order, accurately and efficiently assess for completeness.
  - c. Efficiently secure information to complete a prescription or medication order.
5. Continue to prepare medications for distribution in the community or institutional setting.

## VALIDATION COPY

- a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure.
  - b. Follow established laws and protocols to select the appropriate product.
  - c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory.
  - d. Accurately count or measure finished dosage as specified by the prescription or medication order.
  - e. Assemble the correct ingredients for sterile products that require compounding.
  - f. Determine the correct amounts of ingredients for a compounded product.
  - g. Compound sterile products using appropriate techniques, equipment, and devices.
  - h. Compound nonsterile products using appropriate techniques, equipment, and devices.
  - i. Compound cytotoxic and other hazardous drug products using appropriate techniques.
  - j. Follow safety policies and procedures in the preparation of all medications.
  - k. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation.
  - l. Package the product in the appropriate type and size of container using a manual process or automated system.
  - m. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels.
  - n. Affix the appropriate primary and auxiliary labels to containers.
  - o. Follow protocol to assemble appropriate patient information materials.
  - p. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use.
  - q. Follow established policies and procedures for recording the preparation of controlled substances.
  - r. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.
6. Distribute medications in the community or institutional setting.
    - a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
    - b. Follow established policies and procedures to record the distribution of prescription medications.
    - c. Follow established policies and procedures to record the distribution of controlled substances.
7. Collect payment and/or initiate billing for pharmacy services and goods in the community setting.
    - a. Identify the customer's or patient's method of payment for a prescription or medication order and associated services.
    - b. Use electronic systems to verify third-party coverage for a prescription medication order.
    - c. Verify third-party coverage for a prescription or medication order by phone.
    - d. Accurately complete third-party claims forms.
    - e. Accurately record the receipt of payment for pharmaceutical goods and services.
    - f. Accurately determine those items that are taxable.
    - g. Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.
    - h. Determine payment due the health system for medication orders.
8. Control the inventory of medication, equipment, and devices according to an established plan in the institutional setting.
    - a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.

## VALIDATION COPY

- b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
  - c. Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
  - d. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - e. Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - f. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
  - g. Explain alternative strategies for securing a pharmacy item that is not available.
  - h. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
  - i. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
  - j. Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
  - k. Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.
9. Maintain pharmacy equipment and facilities in the community or institutional setting.
- a. Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
  - b. Clean laminar flow biological safety cabinets using approved technique.
  - c. Maintain a clean and neat work environment.
  - d. Given a weighing or counting device, accurately calibrate the device.
10. Discuss the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting.
- a. Explain the established protocol for recording the preparation of investigational drug products.
  - b. Explain the established protocol for storage of investigational drug products.
  - c. Explain the established protocol to record the distribution of investigational drug products.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (2) Present an image appropriate for the profession of pharmacy in appearance and behavior.
- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5) Apply self-management skills, including time management, stress management, and adapting to change.
- (6) Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

#### **Processing and Handling of Medications and Medication Orders**

- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (25) Prepare patient-specific medications for distribution.

#### **Procurement, Billing, Reimbursement and Inventory Management**

- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.

#### **Patient- and Medication-Safety**

## VALIDATION COPY

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.
- (37) Explain pharmacists' roles when they are responding to emergency situations and how pharmacy technicians can assist pharmacists by being certified as Basic Life Support (BLS) Healthcare Providers.
- (38) Demonstrate skills required for effective emergency preparedness.
- (39) Assist pharmacists in medication reconciliation.

### **Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

### **Regulatory Issues**

- (43) Maintain confidentiality of patient information.

**Course Number and Name:**        **PHM 2634        Practicum III**

**Description:**                                This course is an advanced progression of internship rotations in community hospitals, medical centers, or pharmaceutical manufacturers. The student will be placed in the setting not used in Practicum I. Emphasis is placed on intravenous admixture preparations, total parenteral nutrition, chemotherapy preparations, and the use of controlled and investigational drugs in an institution.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Clinical	Contact Hours
4		12	180

**Prerequisite:**                                Instructor Approved

**Student Learning Outcomes:**

1. Continue to maintain appropriate dress and behavior standards in the community or institutional setting.
  - a. Act ethically in the conduct of all pharmacy practice activities.
  - b. Dress in attire that follows the site's dress code.
  - c. Maintain personal hygiene.
  - d. Consistently maintain personal self-control and decorum.
2. Use appropriate communication to collect pertinent information for use by the pharmacist in the community or institutional setting.
  - a. When presented with a specific patient case, collect pertinent patient information for use by the pharmacist from the medical chart, patient profile, or medical record with efficiency and accuracy.
  - b. Interview patients, their representatives, or their caregivers to collect pertinent patient information for use by the pharmacist.
  - c. Query other health-care professionals to collect pertinent patient information for use by the pharmacist.
  - d. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
  - e. Follow protocol to assemble appropriate patient information materials.
3. Continue to address all communication at an appropriate level in the community or institutional setting.
  - a. Use listening skills consistently in the performance of job functions.
  - b. Use effective strategies for communicating with patients who are non-English speakers or who are impaired (e.g., blind, deaf, cognitively impaired, illiterate).
  - c. Combine compassion with the delivery of pharmacy services.
  - d. Address all communications with a patient or his or her caregiver in a respectful manner.
  - e. Observe legal and ethical guidelines for safeguarding the confidentiality of patient information.
4. Continue to receive and screen prescription or medication orders for completeness in the community or institutional setting.
  - a. Use first-person and electronic systems to receive prescription or medication orders.
  - b. When presented with a prescription or medication order, accurately and efficiently assess for completeness.
  - c. Efficiently secure information to complete a prescription or medication order.
5. Continue to prepare medications for distribution in the community or institutional setting.

## VALIDATION COPY

- a. Accurately create a new patient profile, or enter data into an existing profile according to an established manual procedure or electronic procedure.
  - b. Follow established laws and protocols to select the appropriate product.
  - c. Use knowledge of a site's storage system to efficiently secure the prescribed medications or devices from inventory.
  - d. Accurately count or measure finished dosage as specified by the prescription or medication order.
  - e. Assemble the correct ingredients for sterile products that require compounding.
  - f. Determine the correct amounts of ingredients for a compounded product.
  - g. Compound sterile products using appropriate techniques, equipment, and devices.
  - h. Compound nonsterile products using appropriate techniques, equipment, and devices.
  - i. Compound cytotoxic and other hazardous drug products using appropriate techniques.
  - j. Follow safety policies and procedures in the preparation of all medications.
  - k. Follow safety policies and procedures in the disposal of all hazardous and nonhazardous wastes generated during medication preparation.
  - l. Package the product in the appropriate type and size of container using a manual process or automated system.
  - m. Follow an established manual procedure or electronic procedure to generate accurate and complete product labels.
  - n. Affix the appropriate primary and auxiliary labels to containers.
  - o. Follow protocol to assemble appropriate patient information materials.
  - p. Follow established policies and procedures for recording the preparation of bulk, unit dose, and special doses of medications prepared for immediate use or in anticipation of future use.
  - q. Follow established policies and procedures for recording the preparation of controlled substances.
  - r. Follow the manufacturer's recommendation and/or the pharmacy's guidelines for storage of all medications prior to distribution.
6. Distribute medications in the community or institutional setting.
    - a. Deliver the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
    - b. Follow established policies and procedures to record the distribution of prescription medications.
    - c. Follow established policies and procedures to record the distribution of controlled substances.
7. Collect payment and/or initiate billing for pharmacy services and goods in the community setting.
    - a. Identify the customer's or patient's method of payment for a prescription or medication order and associated services.
    - b. Use electronic systems to verify third-party coverage for a prescription medication order.
    - c. Verify third-party coverage for a prescription or medication order by phone.
    - d. Accurately complete third-party claims forms.
    - e. Accurately record the receipt of payment for pharmaceutical goods and services.
    - f. Accurately determine those items that are taxable.
    - g. Use effective interpersonal skills to deal with customers or patients when obtaining payment for pharmacy goods and services.
    - h. Determine payment due the health system for medication orders.
8. Control the inventory of medication, equipment, and devices according to an established plan in the institutional setting.
    - a. Follow an established procedure for purchasing pharmaceuticals, devices, and supplies.

## VALIDATION COPY

- b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
  - c. Follow established policies and procedures for placing pharmaceuticals, durable medical equipment, devices, and supplies in inventory under proper storage conditions.
  - d. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - e. Follow established policies and procedures for documenting the removal from inventory of expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
  - f. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
  - g. Explain alternative strategies for securing a pharmacy item that is not available.
  - h. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
  - i. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
  - j. Follow established policies and procedures to maintain a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
  - k. Follow established policies and procedures for monitoring the practice site and local laws, regulations, and professional standards.
9. Maintain pharmacy equipment and facilities in the community or institutional setting.
- a. Follow policies and procedures for sanitation management, hazardous waste handling (needles, etc.), and infection control (protective clothing, etc.).
  - b. Clean laminar flow biological safety cabinets using approved technique.
  - c. Maintain a clean and neat work environment.
  - d. Given a weighing or counting device, accurately calibrate the device.
10. Discuss the role of the pharmacist in preparing, storing, and distributing investigational drug products in the institutional setting.
- a. Explain the established protocol for recording the preparation of investigational drug products.
  - b. Explain the established protocol for storage of investigational drug products.
  - c. Explain the established protocol to record the distribution of investigational drug products.

### **ASHP Standards/Goals:**

#### **Personal/Interpersonal Knowledge and Skills**

- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5) Apply self-management skills, including time management, stress management, and adapting to change.
- (6) Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

#### **Processing and Handling of Medications and Medication Orders**

- (18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.
- (25) Prepare patient-specific medications for distribution.

#### **Procurement, Billing, Reimbursement and Inventory Management**

- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.

#### **Patient- and Medication-Safety**

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.



## VALIDATION COPY

- (37) Explain pharmacists' roles when they are responding to emergency situations and how pharmacy technicians can assist pharmacists by being certified as Basic Life Support (BLS) Healthcare Providers.
- (38) Demonstrate skills required for effective emergency preparedness.
- (39) Assist pharmacists in medication reconciliation.

### **Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

### **Regulatory Issues**

- (43) Maintain confidentiality of patient information.

## VALIDATION COPY

**Course Number and Name:** PHM 2715 Pharmacy Management

**Description:** This course is a discussion of pharmacy functions relating to policies and procedures, pharmaceutical purchasing, inventory control, drug recall and return, and maintaining transaction records. The class will explore several retail functions, such as payments, billing, oral and written communications, computer data collection, and pharmaceutical merchandising.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Communicate clearly orally and in writing with professional staff, manufacturers' representatives, and distributors.
  - a. Organize all written or verbal communication logically.
  - b. Address all communication at an appropriate level.
  - c. Use correct grammar, punctuation, spelling, style, and formatting conventions in the preparation of all written communications.
  - d. Pronounce technical terms correctly.
  - e. Use listening skills consistently in the performance of job functions.
2. Use computers to perform pharmacy functions related to inventory control, ordering, and stock status reports.
  - a. Explain typical database used to support pharmacy management functions.
  - b. Demonstrate ability to order by bar code scanning.
  - c. Demonstrate ability to order by computer modem.
  - d. Demonstrate ability to transmit orders via fax machines.
3. Identify pharmaceuticals, durable medical equipment, devices, and supplies to be ordered (e.g., want book).
  - a. Explain the importance of maintaining an adequate supply of pharmaceuticals.
  - b. Explain the role that judgment plays in supplementing an automated system for determining the timing and amount of pharmaceuticals, durable medical equipment, devices, and supplies to order.
  - c. Explain alternative strategies for securing a pharmacy item that is not available.
  - d. State categories of alternative sources of items not available from the primary vendor at times of need.
  - e. Explain the importance of evaluating the costs of securing a needed item from an alternative source.
  - f. Explain acceptable methods for communicating changes in product availability to patients, caregivers, and/or health-care professionals.
4. Purchase pharmaceuticals, devices, and supplies according to an established purchasing program.
  - a. Describe typical procedures for purchasing pharmaceuticals, devices, and supplies.
  - b. Describe typical procedures used to expedite emergency orders.
  - c. Demonstrate the ability to follow established procedures for ordering medications.
5. Control the inventory of medications, equipment, and devices according to an established plan.
  - a. Describe the various methods of inventory control (e.g., prime vendor, just-in-time).

## VALIDATION COPY

- b. Follow established policies and procedures for receiving goods and verifying specifications on the original order.
  - c. Describe the general tasks involved in receiving and verifying the order of goods.
  - d. Describe methods for handling back-ordered medications.
6. Follow established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
- a. State the legal requirements for recording controlled substances received.
  - b. State the procedure for destroying controlled substances.
  - c. Demonstrate the ability to maintain a controlled substance inventory.
7. Follow established policies and procedures for removing from inventory expired or discontinued pharmaceuticals, durable medical equipment, devices, supplies, or recalled items in these same categories.
- a. Define the terms expired, discontinued, and recalled as used in pharmacy.
  - b. Describe common reasons for discontinuing or recalling items.
  - c. Explain the role of documenting item removal in maintaining an inventory system.
  - d. Explain the importance of maintaining a record of repackaging, recalls, and returns of pharmaceuticals, durable medical equipment, devices, and supplies.
  - e. Demonstrate the ability to follow established procedures for removing items from inventory.
8. Demonstrate the ability to manage an institutional formulary.
- a. Explain federal and state laws governing the substitution of drug products.
  - b. Explain the purpose and use of a formulary (e.g., state, health system, buying group).
  - c. Explain the influence that the formulary and/or policies of third-party payers have on the selection of products.
  - d. Explain the procedure for addition or removal of a drug from a formulary.
  - e. Follow an established program to efficiently and accurately collect data for use by the pharmacist in managing pharmacy services.
  - f. State the types of information the pharmacist might request to assist in managing pharmacy services.
9. Use effective communication skills to elicit from the patient or caregiver the desire for the pharmacist to provide counseling on the use of medications.
- a. Organize written or verbal communications to explain the importance of counseling patients in the use of medications.
  - b. Address all communication at an appropriate level.
  - c. Use listening skills consistently in the performance of job functions.
  - d. Describe the legal obligations for patient counseling, including documentation, as specified in OBRA '90.
  - e. Explain effective questioning strategies for determining the desire for the pharmacist to provide counseling.
10. Recognize the need to adapt the delivery of pharmacy services for the culturally diverse, and those with special needs.
- a. Demonstrate ability to use American Sign Language to communicate with the hearing impaired.
  - b. Accommodate patients of diverse cultural backgrounds.
11. Describe and discuss business aspects of institutional or community pharmacy operations.
- a. Understand efficient pharmacy work flow as demonstrated through the use of a plan-o-gram.

- b. Discuss basic business practices such as the financial aspect, personnel management, and conflict negotiations and resolutions.

**ASHP Standards/Goals:**

**Personal/Interpersonal Knowledge and Skills**

- (1) Demonstrate ethical conduct in all job-related activities.
- (3) Communicate clearly when speaking and in writing.
- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5) Apply self-management skills, including time management, stress management, and adapting to change.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

**Foundational Professional Knowledge and Skills**

- (8) Demonstrate understanding of healthcare occupations and the health care delivery system.
- (10) Demonstrate commitment to excellence in the pharmacy profession and to continuing education and training.
- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.
- (14) Demonstrate understanding of major trends, issues, goals, and initiatives taking place in the pharmacy profession.
- (15) Demonstrate understanding of nontraditional roles of pharmacy technicians.

**Processing and Handling of Medications and Medication Orders**

- (17) Assist pharmacists in collecting, organizing, and recording demographic and clinical information for direct patient care and medication-use review.
- (19) Assist pharmacists in the identification of patients who desire/require counseling to optimize the use of medications, equipment, and devices.
- (20) Prepare non-patient-specific medications for distribution (e.g., batch, stock medications).
- (24) Assist pharmacists in the monitoring of medication therapy.

**Procurement, Billing, Reimbursement and Inventory Management**

- (31) Initiate, verify, and assist in the adjudication of billing for pharmacy services and goods, and collect payment for these services.
- (32) Apply accepted procedures in purchasing pharmaceuticals, devices, and supplies.
- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.
- (34) Explain pharmacy reimbursement plans for covering pharmacy services.

**Patient- and Medication-Safety**

- (40) Assist pharmacists in medication therapy management.

**Technology and Informatics**

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

**Regulatory Issues**

- (42) Compare and contrast the roles of pharmacists and pharmacy technicians in ensuring pharmacy department compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.

**Quality Assurance**

- (44) Apply quality assurance practices to pharmaceuticals, durable and nondurable medical equipment, devices, and supplies.
- (45) Explain procedures and communication channels to use in the event of a product recall or shortage, a medication error, or identification of another problem.

## VALIDATION COPY

**Course Number and Name:**        **PHM 2813        Pharmacy Transition**

**Description:**                        This course further develops decision-making skills and promotes an interest in continued professional development. Employment opportunities and responsibilities, as well as preparation for the Pharmacy Technician Certification Exam, are emphasized.

<b>Hour Breakdown:</b>	Semester Credit Hours	Lecture	Lab	Contact Hours
	3	3		45

**Prerequisite:**                        Instructor Approved

**Student Learning Outcomes:**

1.        Prepare for the National Certification Exam.
  - a.        Review specific content areas for the National Certification Exam.
  - b.        Take a mock certification exam for practice.
2.        Discuss the importance of change.
  - a.        Explain why dealing with change is an important skill for a pharmacy technician.
  - b.        Explain the principles for the management of change.
3.        Maintain personal self-control and decorum.
  - a.        Explain typical situations that arise in the work of the pharmacy technician that may challenge self-control.
  - b.        Explain techniques the technician can use to exercise self-control in challenging situations.
  - c.        Follow established policies and procedures to deter theft and/or drug diversion.
4.        Use knowledge of interpersonal skills to effectively manage working relationships.
  - a.        Describe the types of interactions with others that occur in the work of the pharmacy technician.
  - b.        Explain the importance of establishing and maintaining effective interpersonal working relationships with other members of the health-care team.
  - c.        Explain techniques for building good working relationships with others.
5.        Utilize employability skills.
  - a.        List areas of employment available for the pharmacy technician.
  - b.        Prepare a resume, letter of application, and letter of resignation.
  - c.        List do's and don'ts of job interviews.

**ASHP Standards/Goals:**

**Personal/Interpersonal Knowledge and Skills**

- (1)    Demonstrate ethical conduct in all job-related activities.
- (2)    Present an image appropriate for the profession of pharmacy in appearance and behavior.
- (3)    Communicate clearly when speaking and in writing.
- (4)    Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5)    Apply self-management skills, including time management, stress management, and adapting to change.
- (6)    Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.

**Foundational Professional Knowledge and Skills**

- (10)   Demonstrate commitment to excellence in the pharmacy profession and to continuing education and training.
- (15)   Demonstrate understanding of nontraditional roles of pharmacy technicians.

## RECOMMENDED TOOLS AND EQUIPMENT

### **CAPITALIZED ITEMS**

1. Class A prescription balances (1 per 2 students)
2. Laminar air flow hood - horizontal or vertical (1 per program)
3. Pharmacy shelving
4. Unit dose rack (holds minimum of 100) (1 per program)
5. Patient unit dose drawers (12 per program)
6. Repackaging/unit dose machine (1 per program)
7. Analytical scales (1 per program)
8. Syringe pump (1 per program)
9. Micromedix with updates (1 per program)
10. Hospital Pharmacy software (1 per computer)
11. Outpatient Pharmacy software (1 per computer)
12. Automix Compounder and software
13. Clinical Pharmacology software (1 per computer)

### **NON-CAPITALIZED ITEMS**

1. Mortar and pestle, 8 oz (12 per program)

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2. Beakers, 50ml, 100ml, 250ml, 500ml (12 each size per program)
3. Beakers, 1000ml, 3000ml (4 each size per program)
4. Graduated cylinders, 10ml, 25ml, 50ml, 100ml (12 each size per program)
5. Ointment slabs (12 per program)
6. Pill tiles (12 per program)
7. Metric, household, and apothecary Weights (1 set per 2 students)
8. Spatulas, rubber (12 per program)
9. Spatulas, metal (12 per program)
10. Counting trays (12 per program)
11. Emergency eye wash station (1 per program)
12. Auxiliary label holder (1 per program)
13. Sphygmomanometers (6 per program)
14. Stethoscopes (6 per program)
15. Crutches (1 pair per program)
16. Walker (1 per program)
17. TED Hose
18. Ostomy supplies (1 set per program)
19. Patient medication charts (12 per program)
20. Hot plate (1 per 4 students)
21. Nebulizer (1 per program)
22. Chemical spill kit (2 per program)
23. Suppository molds: metal, plastic, and rubber (2 sets each per program)
24. First aid kit (1 per program)
25. Remington's Pharmaceutical Science (1 per 2 students)
26. Physician's Desk Reference (4 per program)
27. Facts and Comparisons (1 per 4 students)
28. APHA Drug Information (current edition) (4 per program)
29. King's Parenteral Admixture Manual (1 set per program)
30. Trissel's Handbook of Injectable Drugs (1 per 4 students)
31. USP/NF Book (2 per program)
32. ASHP Guidelines for Compounding Sterile Products Video (1 per program)
33. ASHP Guidelines for Hazardous Materials Video (1 per program)

### **It is recommended that instructors have access to the following items:**

1. Television (1 per room)
2. VCR/DVD (1 per room)
3. Video camera standard VHS (1 per lab)
4. ELMO presentation system (1 per program)
5. Projector, overhead (1 per room)
6. Table, mobile for portable overhead projector (desk type) (1 per program)
7. Electrical cart, steel, for AV equipment (1 per program)
8. Interactive whiteboard (1 per program)
9. iPads (1 per instructor)
10. Printer, laser (1 networked)
11. Typewriters (2 per program)
12. Word Processing software (1 per computer)
13. LCD panel or interactive whiteboard (1 per program)
14. Computer (1 per student)
15. Video (blood-borne pathogens)

## CURRICULUM DEFINITIONS AND TERMS

- Course Name – A common name that will be used by all community colleges in reporting students
- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students
- Classification – Courses may be classified as the following:
  - Career Certificate Required Course – A required course for all students completing a career certificate.
  - Technical Certificate Required Course – A required course for all students completing a technical certificate.
  - Technical Elective – Elective courses that are available for colleges to offer to students.
- Description – A short narrative that includes the major purpose(s) of the course
- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course
- Corequisites – A listing of courses that may be taken while enrolled in the course
- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies
- The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:

- Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
  - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
  - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
  - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas
- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses **AND** a minimum of 15 semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.
- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:
  - Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework.



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- Revising or extending the student learning outcomes
- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)